



---

A.D. 1853 . . . . . N° 2377.

---

SPECIFICATION

OF

BENJAMIN PRICE.

---

APPARATUS FOR REDUCING QUANTITY OF  
SMOKE EMITTED FROM FURNACES, &c.

---

L O N D O N :

PRINTED BY GEORGE E. EYRE AND WILLIAM SPOTTISWOODE,

PRINTERS TO THE QUEEN'S MOST EXCELLENT MAJESTY :

AND ARE AT THE QUEEN'S PRINTING OFFICE, EAST HARDING STREET,  
NEAR FLEET STREET.

1854.







---

A.D. 1853 . . . . . N° 2377.

---

**Apparatus for Reducing Quantity of Smoke  
emitted from Furnaces, &c.**

---

**LETTERS PATENT** to Benjamin Price, of Fieldgate Street, Whitechapel, in the County of Middlesex, Furnace Builder, for the Invention of "**CERTAIN IMPROVEMENTS IN THE MEANS OF OR APPARATUS FOR REDUCING THE QUANTITY OF SMOKE FROM THE FURNACES OF BOILERS, COPPERS, PANS, AND OTHER LIKE VESSELS.**"

Sealed the 5th December 1853, and dated the 15th October 1853.

---

**PROVISIONAL SPECIFICATION** left by the said Benjamin Price at the Office of the Commissioners of Patents, with his Petition, on the 15th October 1853.

I, BENJAMIN PRICE, of Fieldgate Street, Whitechapel, in the County  
5 of Middlesex, Furnace Builder, do hereby declare the nature of the  
said Invention for "**CERTAIN IMPROVEMENTS IN THE MEANS OF OR APPA-  
RATUS FOR REDUCING THE QUANTITY OF SMOKE FROM THE FURNACES OF  
BOILERS, COPPERS, PANS, AND OTHER LIKE VESSELS,**" to be as follows, that  
is to say:—

10 My Invention has for its object the application of air tubes in con-  
nection with the air chamber or chambers which form the subject of a

---

*Price's Impts. in Apparatus for Reducing Quantity of Smoke, &c.*

---

Patent granted to me on the 25th day of February 1853. The air tubes which I now propose to employ are subjected to the heat of the fire for the purpose of heating the air, which is afterwards admitted to one or more of the chambers described in the Specification of my former Patent, the object being to get a greater supply of heated air to the 5 chambers aforesaid.

---

**SPECIFICATION** in pursuance of the conditions of the Letters Patent, filed by the said Benjamin Price in the Great Seal Patent Office on the 15th April 1854.

**TO ALL TO WHOM THESE PRESENTS SHALL COME, I, 10**  
**BENJAMIN PRICE**, of Fieldgate Street, Whitechapel, in the County of Middlesex, Furnace Builder, send greeting.

**WHEREAS** Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Fifteenth day of October, in the year of our Lord One thousand eight hundred and fifty-three, in the seven- 15  
 teenth year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said Benjamin Price, Her special licence that I, the said Benjamin Price, my executors, administrators, and assigns, or such others as I, the said Benjamin Price, my executors, administrators, and assigns, should at any time agree with, and no 20  
 others, from time to time and at all times thereafter during the term therein expressed, should and lawfully might make, use, exercise, and vend, within the United Kingdom of Great Britain and Ireland, the Channel Islands, and Isle of Man, an Invention for "**CERTAIN IMPROVE- 25**  
**MENTS IN THE MEANS OF OR APPARATUS FOR REDUCING THE QUANTITY OF**  
**SMOKE FROM THE FURNACES OF BOILERS, COPPERS, PANS, AND OTHER LIKE**  
**VESSELS,**" upon the condition (amongst others) that I, the said Benjamin Price, by an instrument in writing under my hand and seal, should particularly describe and ascertain the nature of the said Invention, and in what manner the same was to be performed, and cause the same to 30  
 be filed in the Great Seal Patent Office within six calendar months next and immediately after the date of the said Letters Patent.



---

*Price's Impts. in Apparatus for Reducing Quantity of Smoke, &c.*

---

**NOW KNOW YE**, that I, the said Benjamin Price, do hereby declare the nature of the said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement thereof (that is to say):

5 My Invention of certain improvements in the means of or apparatus for reducing the quantity of smoke from the furnaces of boilers, coppers, pans, and other like vessels, has for its object the application of air tubes in connection with the air chamber or chambers which formed the subject of a Patent granted to me on the Twenty-fifth day of February,  
10 One thousand eight hundred and fifty-three. The air tubes which I now propose to employ are subjected to the heat of the fire for the purpose of heating the air, which is afterwards admitted to one or more of the chambers described in the Specification of my former Patent, the object being to get a greater supply of heated air to the chambers  
15 aforesaid.

In carrying out the object of this my Invention, I in the first place make the bridge of the furnace hollow, somewhat in the form of a tube, and connect the same with hot air tubes formed in the side walls of the furnace, and separated therefrom by a single course of fire brick. The  
20 air is supplied to the hollow bridge from the ash-pit, in which there is an aperture communicating with the hollow bridge. The aperture in the ash-pit is provided with a door, valve or valves, for regulating the supply of air according to circumstances. The air, being first admitted through the aperture in the ash-pit, enters the hollow bridge, and passes along  
25 the side tubes towards the front of the fire, at which place, that is, opposite the dead plate, there is an opening from each side tube for the exit of heated air from the bridge and side tubes, which heated air passes over the fire to the hot air chambers described in the Specification of my former Patent. By this arrangement the fire, as well as the  
30 chambers aforesaid, is plentifully supplied with hot air, which dispenses with the necessity of partially opening the fire door to admit cold air as a means of reducing the quantity of black smoke emitted from the chimney.

In the case of a Cornish or tube boiler, I cause the air to pass  
35 through an opening in the brick work forming the bridge, and along a

---

*Price's Impts. in Apparatus for Reducing Quantity of Smoke, &c.*

---

tube inside the tube of the boiler. The air tube, after traversing the length of the boiler, then splits or divides into two tubes, which proceed from the back end of the boiler along each side of the boiler tube, and also each side of the fire, to the dead plate, through which the heated air passes to the fire, and from thence to the chambers aforesaid. It 5 will therefore be seen that the air is heated by passing through tubes which are inside the boiler tube. The aperture at the bridge is provided with a valve or valves, as herein-before described.

In witness whereof, I, the said Benjamin Price, have hereunto set my hand and seal, this Fifteenth day of April, in the year 10 of our Lord One thousand eight hundred and fifty-four.

BENJAMIN PRICE. (L.S.)

---

LONDON :

Printed by GEORGE EDWARD EYRE and WILLIAM SPOTTISWOODE,  
Printers to the Queen's most Excellent Majesty. 1854.